

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 09 April 2001 (09.04.01)	
International application No. PCT/US00/17988	Applicant's or agent's file reference 110.01100201
International filing date (day/month/year) 29 June 2000 (29.06.00)	Priority date (day/month/year) 29 June 1999 (29.06.99)
Applicant SCHILLER, Peter, J.	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 29 January 2001 (29.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Kiwa Mpay
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

JC18 Rec'd PCT/PTO 27 DEC 2001

Applicant(s): Peter J. Schiller

Docket No.: 110.01100101

Title: MICRO-ELECTROMECHANICAL DEVICES AND METHODS OF MANUFACTURE

BOX PCT

Assistant Commissioner for Patents
Washington, D.C. 20231

We are transmitting the following documents along with this Transmittal Sheet (which is submitted in triplicate):

- ☒ Transmittal Letter to the United States DO/EO/US Concerning a Filing Under 35 U.S.C. 371 (Form PTO-1390, 2 signed copies, 2 pgs each).
- ☐ Formal Drawings (___ Figs on ___ sheets) and Communication re. Submission of Formal Drawings Under 37 CFR 1.85 (1 pg).
- ☐ A signed/unsigned Declaration and Power of Attorney (___ pgs).
- ☒ Application Data Sheet (2 pgs).
- ☒ An itemized return postcard.
- ☐ An Assignment of the invention to ___ and Recordation Form Cover Sheet.
- ☐ A check in the amount of \$40.00 to pay the Assignment Recording Fee.
- ☒ A Preliminary Amendment (10 pgs total, including Appendix A (6 pgs)).
- ☐ Computer readable form of "Sequence Listing." Applicants state that the paper copy form of the "Sequence Listing" section of the present application, and the computer readable form submitted herewith, are the same.
- ☒ Other: Copy of International Preliminary Examination Report; Copy of International Search Report.
- ☒ A check in the amount of \$ 1,146.00 to pay the filing fee.

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 13-4895. Triplicate copies of this sheet are enclosed.

MUETING, RAASCH & GEBHARDT, P.A.

Customer Number: 26813

By: 

Name: Kevin W. Raasch

Reg. No.: 35,651

Direct Dial: 612-305-1218

Facsimile: 612-305-1228

CERTIFICATE UNDER 37 CFR §1.10:

"Express Mail" mailing label number: EL 888271872 USDate of Deposit: 27 December 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to "BOX PCT, Assistant Commissioner for Patents, Washington, D.C. 20231."

By: 

Name: Gara L. Ladwig

(TRANSMITTAL UNDER RULE 1.10)

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

RAASCH, Kevin W.
MUETING, RAASCH & GEBHARDT, P.A.
P.O. Box 581415
Minneapolis, MN 55458-1415
ETATS-UNIS D'AMERIQUE

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year) 19.10.2001

Applicant's or agent's file reference
110.01100201

IMPORTANT NOTIFICATION

International application No.
PCT/US00/17988

International filing date (day/month/year)
29/06/2000

Priority date (day/month/year)
29/06/1999

Applicant
REGENTS OF THE UNIVERSITY OF MINNESOTA

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

RECEIVED

NOV 01 2001

Name and mailing address of the IPEA/

European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Reddy, J

Tel. +49 89 2399-2231



REC'D 23 OCT 2001

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference 110.01100201	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/17988	International filing date (day/month/year) 29/06/2000	Priority date (day/month/year) 29/06/1999
International Patent Classification (IPC) or national classification and IPC B81B3/00		
Applicant REGENTS OF THE UNIVERSITY OF MINNESOTA		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 29/01/2001	Date of completion of this report 19.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Cortes Rosa, Joao Telephone No. +49 89 2399 2264 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/17988

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
- Description, pages:**

1-16 as originally filed

Claims, No.:

1-27 as originally filed

Drawings, sheets:

1/3-3/3 as received on 01/01/2001 with letter of 20/10/2000

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US00/17988

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-14,16-22,24-27
	No:	Claims	1,15,23

Inventive step (IS)	Yes:	Claims	-
	No:	Claims	1-27

Industrial applicability (IA)	Yes:	Claims	1-27
	No:	Claims	-

2. Citations and explanations
~~see separate sheet~~

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/17988

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: DE 42 27 819 A (YAMATAKE HONEYWELL CO LTD) 25 February 1993
(1993-02-25)

2. The subject-matter of claims 1, 15 and 23 is not new in the sense of Article 33(2) PCT.

2.1 Document D1 (see in particular Figures 17-23 with the corresponding description) discloses a method of manufacturing a micro-mechanical device from which the subject-matter of claim 1, as far as it is understandable, does not differ.

2.2 Document D1 (see in particular Figure 23 with the corresponding description) discloses a micro-electromechanical device from which the subject-matter of claim 23, as far as it is understandable, does not differ. In particular, diaphragm layer 35a (see Figure 23 in connection with Figure 18) is suspended directly above a portion of the substrate 31 surrounding the opening void 18 and the suspended portion of this diaphragm layer 35a and the substrate 31 form an included angle at their junction of 0° , which is less than 90° .

2.3 As far as claim 15 is understandable, it seems to describe an intermediary state during the manufacture of a micro-electromechanical device like the one described in claim 23 and known from D1. This intermediary state is also known from D1 (see Figure 22 and the corresponding description).

3. The dependent claims on file do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/17988

Re Item VIII

Certain observations on the international application

1. Independent claim 1 describes a manufacturing method. This method unambiguously leads to a device having a void in the substrate and where the presence of a sacrificial material is not relevant, since it might be completely removed during the manufacturing process. Independent claim 15 on the other hand describes a device having a sacrificial material but no voids, and independent claim 23 describes a device having a void but no sacrificial material. These different combinations of features render unclear what exactly the invention is and which are its essential features (Article 6 PCT).
2. The features of the claims on file are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT), although this would highly facilitate a quicker understanding of these claims.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/17988

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B81B/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B81B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 42 27 819 A (YAMATAKE HONEYWELL CO LTD) 25 February 1993 (1993-02-25)	1-6,8, 11, 15-19, 21-23, 26,27
Y	figures 14-23,33-39 column 12, line 55 -column 13, line 47 column 14, line 62 -column 15, line 65	7,14,24, 25 9,10,12, 13,20
A		
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

4 October 2000

Date of mailing of the international search report

17/10/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Polesello, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/17988

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 725 785 A (ISHIDA TATSUYA ET AL) 10 March 1998 (1998-03-10) figures 2A, 4-18 column 2, line 5 - line 20 column 2, line 55 - column 3, line 67 column 5, line 22 - column 6, line 67 column 7, line 52 - column 10, line 61	1-5, 11-13
Y		7, 14, 24, 25
A		6, 8-10, 15-23, 26, 27
X	PATENT ABSTRACTS OF JAPAN vol. 014, no. 182 (E-0916), 12 April 1990 (1990-04-12) & JP 02 033974 A (MITSUBISHI ELECTRIC CORP), 5 February 1990 (1990-02-05) abstract	1, 3-6, 8, 9, 15, 17-20, 22
A		2, 7, 10-14, 16, 21, 23-27
X	US 4 784 721 A (HOLMEN JAMES O ET AL) 15 November 1988 (1988-11-15) figures 3-8 column 2, line 5 - line 47 column 3, line 20 - column 5, line 29	1, 3-6, 8, 9, 15, 17-20
A		2, 7, 10-14, 16, 21-27
X	US 5 332 469 A (MASTRANGELO CARLOS H) 26 July 1994 (1994-07-26) figures 1, 4 column 2, line 53 - column 3, line 15 column 3, line 39 - line 60 column 6, line 3 - column 8, line 9	1-5, 15-18, 23, 26, 27
A		6-14, 19-22, 24, 25
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 01, 30 January 1998 (1998-01-30) -& JP 09 237903 A (NIKON CORP), 9 September 1997 (1997-09-09) abstract	1-27
A	US 5 209 119 A (POLLA DENNIS L ET AL) 11 May 1993 (1993-05-11) figures 30-3F column 7, line 22 - line 62	10, 21, 22

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/17988

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4227819 A	25-02-1993	JP 5187947 A	27-07-1993
US 5725785 A	10-03-1998	JP 8236784 A	13-09-1996
JP 02033974 A	05-02-1990	NONE	
US 4784721 A	15-11-1988	CA 1295055 A	28-01-1992
		DE 68919870 D	26-01-1995
		DE 68919870 T	29-06-1995
		EP 0330105 A	30-08-1989
		JP 1309384 A	13-12-1989
US 5332469 A	26-07-1994	US 5258097 A	02-11-1993
		DE 4402085 A	11-08-1994
		GB 2274945 A,B	10-08-1994
		JP 7007161 A	10-01-1995
		DE 4338423 A	19-05-1994
		GB 2272571 A,B	18-05-1994
		JP 6267929 A	22-09-1994
JP 09237903 A	09-09-1997	NONE	
US 5209119 A	11-05-1993	EP 0562031 A	29-09-1993
		JP 6503423 T	14-04-1994
		WO 9210729 A	25-06-1992

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 110.01100201	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 00/17988	International filing date (day/month/year) 29/06/2000	(Earliest) Priority Date (day/month/year) 29/06/1999
Applicant REGENTS OF THE UNIVERSITY OF MINNESOTA		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of Invention is lacking (see Box II).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.

10

☐ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B81B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B81B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 42 27 819 A (YAMATAKE HONEYWELL CO LTD) 25 February 1993 (1993-02-25)	1-6, 8, 11, 15-19, 21-23, 26, 27
Y	figures 14-23, 33-39 column 12, line 55 - column 13, line 47 column 14, line 62 - column 15, line 65	7, 14, 24, 25 9, 10, 12, 13, 20
A	---	---

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

4 October 2000

Date of mailing of the international search report

17/10/2000

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Polesello, P

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 725 785 A (ISHIDA TATSUYA ET AL) 10 March 1998 (1998-03-10) figures 2A, 4-18 column 2, line 5 - line 20 column 2, line 55 - column 3, line 67 column 5, line 22 - column 6, line 67 column 7, line 52 - column 10, line 61	1-5, 11-13
Y		7, 14, 24, 25
A		6, 8-10, 15-23, 26, 27
X	----- PATENT ABSTRACTS OF JAPAN vol. 014, no. 182 (E-0916), 12 April 1990 (1990-04-12) & JP 02 033974 A (MITSUBISHI ELECTRIC CORP), 5 February 1990 (1990-02-05) abstract	1, 3-6, 8, 9, 15, 17-20, 22
A		2, 7, 10-14, 16, 21, 23-27
X	----- US 4 784 721 A (HOLMEN JAMES O ET AL) 15 November 1988 (1988-11-15) figures 3-8 column 2, line 5 - line 47 column 3, line 20 - column 5, line 29	1, 3-6, 8, 9, 15, 17-20
A		2, 7, 10-14, 16, 21-27
X	----- US 5 332 469 A (MASTRANGELO CARLOS H) 26 July 1994 (1994-07-26) figures 1, 4 column 2, line 53 - column 3, line 15 column 3, line 39 - line 60 column 6, line 3 - column 8, line 9	1-5, 15-18, 23, 26, 27
A		6-14, 19-22, 24, 25
A	----- PATENT ABSTRACTS OF JAPAN vol. 1998, no. 01, 30 January 1998 (1998-01-30) -& JP 09 237903 A (NIKON CORP), 9 September 1997 (1997-09-09) abstract	1-27
A	----- US 5 209 119 A (POLLA DENNIS L ET AL) 11 May 1993 (1993-05-11) figures 3D-3F column 7, line 22 - line 62	10, 21, 22

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/17988

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4227819 A	25-02-1993	JP 5187947 A	27-07-1993
US 5725785 A	10-03-1998	JP 8236784 A	13-09-1996
JP 02033974 A	05-02-1990	NONE	
US 4784721 A	15-11-1988	CA 1295055 A	28-01-1992
		DE 68919870 D	26-01-1995
		DE 68919870 T	29-06-1995
		EP 0330105 A	30-08-1989
		JP 1309384 A	13-12-1989
US 5332469 A	26-07-1994	US 5258097 A	02-11-1993
		DE 4402085 A	11-08-1994
		GB 2274945 A,B	10-08-1994
		JP 7007161 A	10-01-1995
		DE 4338423 A	19-05-1994
		GB 2272571 A,B	18-05-1994
		JP 6267929 A	22-09-1994
JP 09237903 A	09-09-1997	NONE	
US 5209119 A	11-05-1993	EP 0562031 A	29-09-1993
		JP 6503423 T	14-04-1994
		WO 9210729 A	25-06-1992